

The formations found within the HLWA are the Relief Peak Formation, Quartz Latite Porphyry flows, and Leviathan Peak Andesite (John et al. 1981). The Relief Peak Formation is an andesite and basaltic flow formation containing flow breccias, lahars, intrusive rocks, and volcanic sediments (John et al. 1981). The Quartz Latite Porphyry flows, found to the south of the eastern portion, are "intrusive onto Relief Peak Formation and overlain by the Leviathan Peak Andesite" (John et al. 1981). Leviathan Peak Andesite, a flow formation containing "platy-jointed, flow-banded porphyritic hornblende andesite flows and shallow intrusions," is found on the northern border of the project area (John et al. 1981).

### **Hydrology**

Heenan Lake dam was constructed in 1924 by the Dangberg Family (Bryson 2000). Heenan Lake collects snowmelt and spring water from uplands to the north and east (Bryson 2000). Heenan Creek makes up the major drainage of the eastern portion of the HLWA property, and an un-named drainage flows into Heenan Lake from the north (**Figure 4**). A derelict diversion ditch conveys runoff to Heenan Lake from an unnamed tributary to Monitor Creek, north of Sagehen Flat. During high water years, Heenan Lake also spills water into Monitor Creek, which flows down-slope along State Route 89. Heenan Lake covers 130 surface acres and has a capacity of 3,000 acre-feet. Heenan Creek water temperature can fluctuate greatly during the course of a day because of the small, shallow nature of the creek (Bryson 2000). Summer temperatures typically range from 35° F in the morning to 60° F in the afternoon (Bryson 2000).

## **III. HABITAT AND SPECIES DESCRIPTIONS**

The unique climate and topography of the area supports a number of plant communities, which, consequently, satisfy the habitat needs of a vast range of plant and animal species.

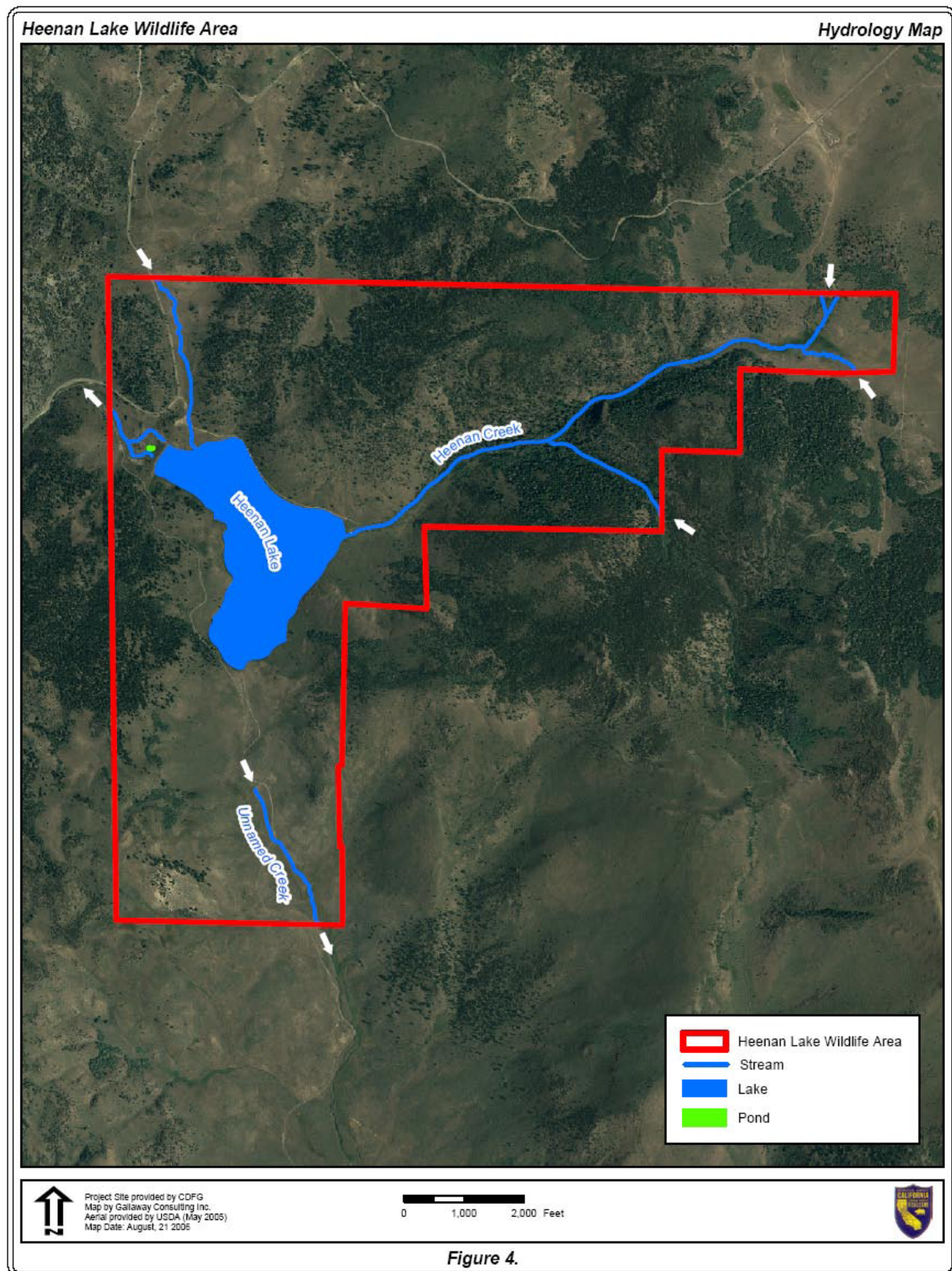
The HLWA provides habitat for several species including the Lahontan cutthroat trout, several species of ducks, raptors including bald eagles and golden eagles, passerines, and mammals including coyotes, mule deer, black bears, and pika (*Ochonta princeps*).

### **Vegetation Communities, Habitats and Plant Species**

Vegetation surveys and habitat typing and mapping were conducted by CDFG staff using the CWHR habitat classification system. Eleven habitat types were mapped within the HLWA. They include: Annual Grassland, Aspen, Bitter Brush, Jeffery Pine, Juniper, Lacustrine, Montane Chaparral, Montane Riparian, Sage Brush, Wet Meadow, and Urban.

Heenan Lake provides the open-water lacustrine habitat that occurs on-site. The Lake is 130 surface acres, made up of open-water and littoral habitat. The 51 acres of montane riparian habitat within the HLWA occur as a long strip along Heenan creek, which flows from the northeast into Heenan Lake (**Figure 4**). Wet Meadow habitat can be found along the spillway of Heenan Lake, as well as a small patch to the northeast,

Figure 4

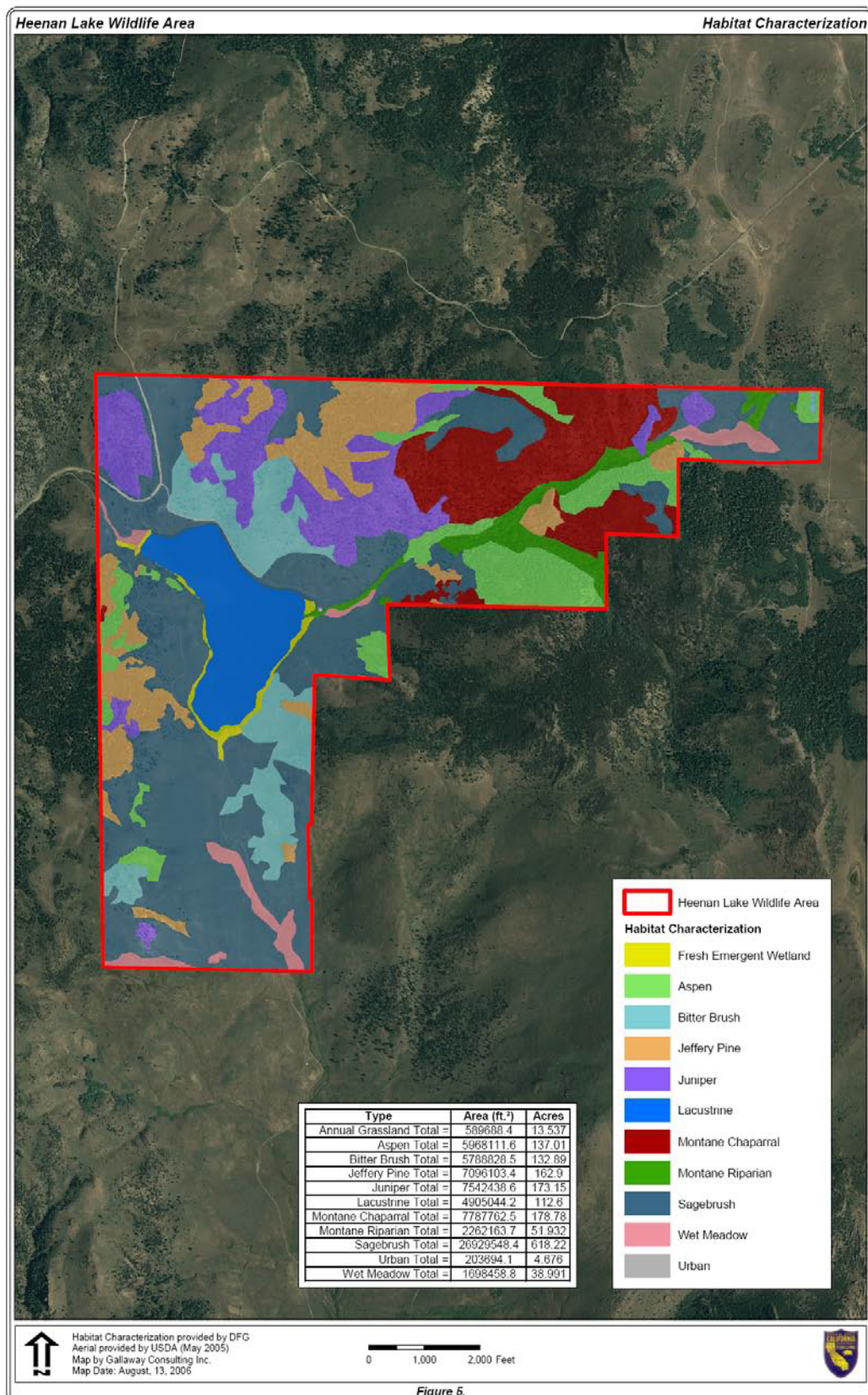


and 3 small patches to the southwest within the HLWA boundaries, totaling 38 acres (**Figure 5**). Annual grassland occurs as a thin strip around the east, south and west side of Heenan Lake, and a small patch occurs adjacent to the Heenan Lake spillway (**Figure 5**). Annual grassland totals 13 acres. Sagebrush is the largest habitat found on-site totaling 618 acres (**Figure 5**) and is found throughout the HLWA. Bitterbrush habitat totals 132 acres, and is found north of Heenan Lake as well as in two patches in the south of the HLWA (**Figure 5**). Jeffery pine habitat, totaling 162 acres, is found intermixed with juniper habitats totaling 173 acres, and aspen habitats totaling 137 acres. Jeffery pine and juniper habitats are encroaching upon aspen stands, especially on the western boundary (**Figure 5**) of the HLWA. Montane chaparral habitat is found in the northeastern portion of the HLWA and totals 178 acres (**Figure 5**). Urban habitat, totaling 4 acres, consists of two buildings that house the egg taking station and the parking area (**Figure 5**).

Plant communities correspond with the Guide to Wildlife Habitats of California (CWHR) (Mayer and Laudenslayer 1988). Habitat types are cross walked into corresponding classifications from An Annotated List of California Habitat Types (Cheatham 1975), the CDFG California Natural Diversity Database (CNDDB) (CDFG 1986), and A Manual of California Vegetation (Sawyer, Keeler-Wolf 1995) in **Table 1**.



Figure 5



**Table 1: Habitat Crosswalk for the Heenan Lake Wildlife Area**

<b>CWHR Habitat Type</b>	<b>CNDDB 1986</b>	<b>Sawyer, Keeler-Wolf, 1995</b>	<b>Cheatham and Haller (1975)</b>	<b>Total Acres</b>
Juniper Woodland	Juniper-Oak Cismontane Woodland (72310)	California Juniper Woodland and Shrubland	Northern Juniper Woodland (7.211)	173.15
	Northern Juniper Woodland (72110)	Mountain Juniper Woodland		
	Great Basin Juniper Woodland and Scrub (72123)	Utah Juniper Woodland		
	Cismontane Juniper Woodland and Scrub (72400)	Western Juniper Woodland		
Jeffery Pine	Northern Ultramafic Jeffery Pine Forest (84171)	Jeffery Pine Forest and Woodland	Jeffery Pine (8.51)	162.9
	Southern Ultramafic Jeffery Pine Forest (84172)	Jeffery Pine- Ponderosa Pine Forest and Woodland	Upper Montane Mixed Conifer Forest (8.52)	
	Jeffery Pine Forest (85100)			
	Jeffery Pine-Fir Forest (85210)			
Bitter Brush	Great Basin Mixed Scrub (35100)	Antelope Bitterbrush Shrubland	Sagebrush Scrub (3.31)	132.89
	Big Sagebrush Scrub (35210)	Blackstem Rabbitbrush		
	Rabbitbrush Scrub (35400)	Bluebunch Wheatgrass Bunchgrass Grassland		
	Shadscale Scrub (36140)	Cliff Rose Scrub		
		Parry Rabbitbrush Dwarf Scrub		
		Rubber Rabbitbrush Scrub		
		Curleaf Mountain Mahogany Woodland and Scrub		

<b>CWHR Habitat Type</b>	<b>CNDDB 1986</b>	<b>Sawyer, Keeler-Wolf, 1995</b>	<b>Cheatham and Haller (1975)</b>	<b>Total Acres</b>
Wet Meadow	Meadow and Seep (45000)	Alpine Habitat	Montane Meadow (4.51)	38.99
		Montane Meadow	High Elevation Meadows (4.52)	
		Beaked Sedge	Alkali Meadows (4.55)	
		Nebraska Sedge	Alkali Seep (4.55)	
		Rocky Mountain Sedge	Freshwater Seep (4.56)	
		Sedge Series		
		Shorthair Sedge Series		
		Spikerush Series		
Lacustrine	-----	-----	Lakes and Ponds (10.4)	112.60
Annual Grassland	Bald Hills Prairie (41200)	California Annual Grassland	Costal Prairie (4.1)	13.54
	Valley and Foothills Grassland (42000)	California Annual Herbland	Valley and Foothill Grassland (4.2)	
Montane Chaparral	Montane Chaparral (37500)	Birchleaf Mountain-Mahogany	Montane Chaparral (3.75)	178.78
	Montane Dwarf Scrub (38000)			
Montane Riparian	Montane Riparian Forest (61500)	Mixed Willow Series	Mixed Riparian Woodlands (6.21)	51.93
	Montane Riparian Scrub (63500)	Lemmon's Willow Riparian Scrub	Red Alder Groves (6.22)	
			Willow Thickets (6.24)	
Sagebrush	Blackbrush Scrub (34300)	Big Sagebrush Shrubland	Great Basin Sagebrush (3.311)	618.22
	Great Basin Mixed Scrub (35100)	Curleaf Mountain Mahogany and Scrub	Wyethia Meadow – Scrub (3.34 – 4.53)	
	Big Sagebrush Scrub (35210)	Parry Rabbitbrush Dwarf Scrub		

CWHR Habitat Type	CNDDB 1986	Sawyer, Keeler-Wolf, 1995	Cheatham and Haller (1975)	Total Acres
	Sagebrush Steppe (35300)	Rubber Rabbitbrush Scrub		
	Rabbitbrush Scrub (35400)	Ashy Ryegrass		
	Great Basin Juniper Woodland and Scrub (72123)	Blackstem Rabbitbrush		
		Blue Sage Dwarf Scrubland		
		Bluebunch Wheatgrass Bunchgrass Grassland		
		Green Ephedra – Basin Sagebrush		
		Mountain Big Sagebrush Scrub		
		Silver Sagebrush		
Urban	-----	-----	-----	4.68
Aspen	Aspen Riparian Forest (61520)	Quaking Aspen Forest	Aspen Groves (6.23)	137.01
	Aspen Forest (81B00)			

## JUNIPER WOODLAND

Juniper Woodland is also known as:

- Cismontane Juniper Woodland and Scrub, etc. (CNDDB 1986)
- California Juniper Series, etc, (Sawyer and Keeler-Wolf 1995)
- Northern Juniper Woodland (Cheatham and Haller 1975)

Juniper woodlands are common on level, to gently rolling, topography though they may occur on virtually all exposures and slopes (Dealy et al. 1978). They will utilize soils ranging from rocky and well drained to drier or poorly drained (Cheatham and Haller 1975). Dispersion of western juniper ranges from small clumps to widely scattered individuals (Dealy et al. 1978). Associates may include common yarrow (*Achillea millefolium*), serviceberry (*Amelanchier alnifolia*), rubber rabbitbrush (*Ericameria nauseosa*), largeflower hawksbeard (*Crepis occidentalis*), wild rye (*Elymus glaucus*), big squirrel-tail grass (*Elymus elymoides*), pestle parsnip (*Lomatium nudicaule*), gay penstemon (*Penstemon laetus*), showy phlox (*phlox speciosa*), desert gooseberry (*Ribes velutinum*), and nose skullcap (*Scutellaria antirrhinoides*) (**Photo 5**). Juniper berries are an important food source for wintering birds (Mayer and Laudenslayer 1988).





**Photo 5.** Showy Phlox at the HLWA.

## JEFFERY PINE

Jeffery Pine Woodlands are also known as:

- Jeffery Pine Forest, etc. (CNDDDB 1986)
- Jeffery Pine Forest and Woodland, etc. (Sawyer, Keeler-Wolf, 1995)
- Jeffery Pine, etc. (Cheatham and Haller 1975)

Jeffery pine woodlands are tolerant of areas influenced by frost, and commonly occur on soils whose parent materials are granite and lava flow (Mayer and Laudenslayer 1988). Jeffery pine woodlands can be comprised of a number of other plant species including black oak (*Quercus kelloggii*), canyon live oak *Quercus chrysolepis*), foxtail pine (*Pinus balforiana*), incense-cedar (*Calocedrus decurrens*), interior live oak (*Quercus wislizeni*), knobcone pine (*Pinus attenuata*), lodgepole pine (*Pinus contorta* var. *murrayana*), ponderosa pine (*Pinus ponderosa*), Port Orford-cedar (*Chamaecyparis lawsoniana*), red fir (*Abies magnifica* var. *magnifica*), Shasta fir (*Abies magnifica* var. *shastensis*), western juniper, and western white pine (*Pinus monticola*) (Sawyer and Keeler-Wolf 1995). The seeds and bark of Jeffery pine trees are important food sources to many wildlife species, including squirrels (family Sciuridae), mule deer, nuthatches (family Sittidae), brown creepers (family Certhiidae), and woodpeckers (family Picidae) (Mayer and Laudenslayer 1988).

## BITTER BRUSH

Bitter Brush (*Purshia tridentata*) is also known as:



- Great Basin Mixed Scrub, etc. (CNDDDB 1986)
- Sagebrush Scrub (Cheatham and Haller 1975)
- Antelope Bitterbrush Shrubland, etc. (Sawyer, Keeler-Wolf 1995)

Bitter brush tends to occupy well-drained, rapidly permeable soils; and live where climates are warm in summer and very cold in winter. Bitter brush provide moisture, calcium, phosphorus, and fat to the mule deer, and pronghorn antelope (*Antilocapra americana*) that feed on it (Hickman 1975). Bitter brush is also very browse tolerant, and provides an excellent source of protein during the winter months. It is often found with rabbitbrush (*Chrysothamnus nauseosus*), big sagebrush, mahogany, and gray horsebrush (*Tetradymia* sp.) (Mayer and Laudenslayer 1988).

### WET MEADOW

Wet Meadow is also known as:

- Meadow and Seep (CNDDDB 1986)
- Montane Meadow, etc. (Cheatham and Haller 1975)
- Sedge Series, etc. (Sawyer and Keeler-Wolf 1995)

Wet meadows occur where water is at, or near, the surface for most of the growing season (Mayer and Laudenslayer 1988) (**Photo 6**). Seasonality and reliability of annual hydrologic regimes largely determine the consistency of vegetation within wet meadows, which will persist indefinitely unless the regimes are altered (Mayer and Laudenslayer 1988). Plants commonly found in wet meadow habitats are generally from the genera *Carex*, *Danthonia*, *Juncus*, *Salix*, and *Scirpus*. Dehydrated, late summer wet meadows may provide foraging habitat and cover for small mammals. Blacktail deer (*Odocoileus hemionus* ssp. *columbianus*), mule deer, and elk (*Cervus canadensis*) may feed in wet meadows (Mayer and Laudenslayer 1988). Wet meadows also provide fawning grounds for these species. Waterfowl, yellow-headed blackbird (*Xanthocephalus xanthocephalus*) and red-winged blackbird (*Agelaius phoeniceus*) may visit and/or occasionally nest within wet meadow vegetation (Mayer and Laudenslayer 1988). Various frogs and reptiles also frequent this habitat type.



**Photo 6.** Wet Meadow Habitat at the HLWA.

## LACUSTRINE

Lacustrine habitat is also known as:

- Ponds and Lakes (Cheatham and Haller 1975)

Ponds and lakes, usually permanently flooded, can vary greatly in size and depth. Ponds and lakes can contain emergent vegetation (**Photo 7**), submerged vegetation, and free-floating vegetation, such as duckweed (*Lemna* sp.) and phytoplankton. Lakes and ponds consist of open water and the “littoral” areas. In open water habitats photosynthesis of the phytoplankton is the basis of the food chain; zooplankton eat the phytoplankton, small fish and invertebrates eat the zooplankton, which are in turn eaten by larger fish and insects (Mayer and Laudenslayer 1988). This food chain, combined with submerged and emergent plants in the littoral areas, provide food for numerous animals (Mayer and Laudenslayer 1988).



**Photo 7.** Littoral zone around Heenan Lake.

## ANNUAL GRASSLAND

Annual Grassland is also known as:

- Valley and Foothill Grassland, etc. (CNDDDB 1986)
- Valley and Foothill Grassland, etc. (Cheatham and Haller 1975)
- California Annual Grassland, etc (Sawyer and Keeler-Wolf 1995)

### *Annual Grassland*

The physiognomy of annual grassland can vary annually and/or seasonally depending on grazing regimes and climate. Non-native grasses and forbs tend to dominate annual grasslands in California (Mayer and Laudenslayer 1988). They occur on level plains to gently undulating foothills and often occur beneath oak trees in oak woodlands. Common annual grassland species include: wild oats (*Avena fatua*), soft chess (*Bromus mollis*), red brome (*Bromus rubens*), ripgut brome (*Bromus diandrus*), foxtail fescue (*Festuca megalura*), broadleaf filagree (*Erodium* sp.), redstem filagree (*Erodium* sp.), turkey mullein (*Eremocarpus setigerus*), true clovers (*Trifolium* sp.), bur clover (*Trifolium* sp.), and popcorn flower (*Plagiobothrys nothofulvus*) (Mayer and Laudenslayer 1988). Annual grassland provides foraging habitat for many wildlife species (Mayer and Laudenslayer 1988). Reptiles, such as the western fence lizard (*Sceloporus*

*occidentalis*), common garter snake (*Thamnophis sirtalis*), and western rattlesnake (*Crotalus viridis*), use annual grassland for breeding (Basey and Sinclear 1980). Mammals commonly associated with this habitat include the black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), badger (*Taxidea taxus*), and coyote (White et al. 1980). The burrowing owl (*Athene cunicularia*), mourning dove (*Zenaida macroura*), and western meadowlark (*Sturnella neglecta*) are commonly seen nesting in annual grassland (Mayer and Laudenslayer 1988). Annual grassland is an important foraging habitat for raptors (Mayer and Laudenslayer 1988).

## MONTANE CHAPARRAL

Montane Chaparral is also known as:

- Montane Chaparral, etc. (CNDDDB 1986)
- Montane Chaparral (Cheatham and Haller 1975)
- Birchleaf Mountain Mahogany (Sawyer, Keeler-Wolf 1995)

Montane chaparral habitat varies in density, height, and crown cover depending on the influences of fire and soils in the area (Mayer and Laudenslayer 1988). At maturity, the montane chaparral habitat can be impenetrable to large animals (Mayer and Laudenslayer 1988). Species found in montane chaparral habitats are generally evergreen, however, deciduous shrubs can also intermix (Mayer and Laudenslayer 1988).

Infrequent fires are an important component of the continued success of montane chaparral. After fire within montane chaparral habitat the first stage of recovery is the emergence of herbaceous plants and the re-sprouting of shrubs from the root and seeds. The herbaceous species rely on long-lived seeds to survive and sprout after the next burn sequence (Mayer and Laudenslayer 1988). Eventually, the shrub canopy will increase, blocking sun exposure and out-competing the herbaceous species. If montane chaparral has not burned in some-time it can be overrun by conifer development, which will reduce chaparral shrubs with shading (Mayer and Laudenslayer 1988). Montane chaparral is very important to deer which utilize the habitat as foraging area, cover, and areas to fawn (Mayer and Laudenslayer 1988). Herbivorous rodents eat the twigs and leaves, and insects and seed-eating birds forage and nest in montane chaparral (Mayer and Laudenslayer 1988). On-site habitat originally mapped as mixed chaparral, was verified as montane chaparral by Gallaway Consulting, Inc.

## MONTANE RIPARIAN

Montane Riparian is also known as:

- Montane Riparian Forest, etc. (CNDDDB 1986)



- Mixed Riparian Woodland, etc. (Cheatham and Haller 1975)
- Mixed Willow Series, etc. (Sawyer, Keeler-Wolf 1995)

Generally no more than 50 feet wide, montane riparian habitats are linear in nature as they run along rivers and streams (Mayer and Laudenslayer 1988). Plant species found in montane riparian habitats include thin leafed (sitka) alder (*Alnus viridis* ssp. *sinuate*), aspen, black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), dogwood (*Cornus* sp.), wild azalea (*Rhododendron occidentale*), water birch (*Betula occidentalis*), and white alder (*Alnus rhomifolia*) (Mayer and Laudenslayer 1988). Riparian habitats provide water, migration corridors, food, nesting sites, and thermal cover to many wildlife species (Mayer and Laudenslayer 1988).

## SAGEBRUSH

Sagebrush (*Artemisia* sp.) habitat is also known as:

- Blackbrush Scrub, etc. (CNDDDB 1986)
- Great Basin Sagebrush, etc. (Cheatham and Haller 1975)
- Big Sagebrush, etc. (Sawyer, Keeler-Wolf 1995)

Sagebrush stands are generally very large, and their density can vary from very open to touching crowns (Mayer and Laudenslayer 1988). Sagebrush roots are deep and spread laterally near the soil surface utilizing almost all the edaphic soil resources in the area to the exclusion of other plants (Mayer and Laudenslayer 1988). Therefore, sagebrush plants tend to be in pure stands or with other species of sagebrush, and of uniform size and spacing (Mayer and Laudenslayer 1988). Other plant species that may occur with sagebrush are rabbitbrush, horsebrush, gooseberry, western chokecherry (*Prunus virginiana* L. var. *demissa*), curleaf mountain mahogany (*cercocarpus ledifolius*), and bitterbrush. Wildlife found in association with sagebrush stands include mule deer, jackrabbits, ground squirrels (family Sciuridae), least chipmunk (*Neotamias minimus*), kangaroo rats (*Dipodomys* sp.), wood rats (*Neotoma* sp.), pocket mice (family Heteromyidae), deer mice (*Peromyscus maniculatus*), grasshopper mice (*Onychomys leucogaster*), sagebrush vole (*Lemmyscus curtatus*), sage grouse (*Centrocercus urophasianus*), gray flycatcher (*Empidonax wrightii*), black-billed magpie (*Pica hudsonia*), chuckar (*alectoris chukar*), pinyon jay (*Gymnorhynchus cyanocephalus*), sage thrasher (*Oreoscoptes montanus*), several sparrows (family Emberizidae), and hawks (family Accipitridae).

## URBAN

Urban vegetation tends to be of low diversity but high biomass production due to fertilization and irrigation (Mayer and Laudenslayer 1988). The mix of native and non-native species provides a diversity of food available to wildlife species in the form of berries and seeds (Mayer and Laudenslayer 1988). Tree density is dependent on landscape planning, and the understory shrub layer tends to be minor (Mayer and Laudenslayer 1988). Animal species that tend to do well in urban areas are scrub jay

(*Aphelocoma californica*), mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and striped skunk (*Mephitis mephitis*).

The areas characterized as urban within the HLWA include the egg taking station, road, and parking lot. The Urban habitat is located adjacent to montane riparian and sagebrush habitat and is not typical of urban habitat described above with landscaping, irrigation, and a low diversity of vegetation.

## ASPEN

Aspen habitat is also known as:

- Aspen Riparian Forest, etc. (CNDDDB 1986)
- Aspen Groves (Cheatham and Haller 1975)
- Quaking Aspen Forest (Sawyer, Keeler-Wolf 1995)

Aspen stands tend to be mixed with other deciduous and conifer trees in open canopies allowing a healthy understory or shrubs and herbaceous plants (Mayer and Laudenslayer 1988).

Aspen stands are considered a stage of the successional reclamation of land by forest after fire disturbance; long-term fire suppression in an area may result the disappearance of aspen stands in that area (Mayer and Laudenslayer 1988). Aspen stands are commonly found near streams and can be the only tree species near sagebrush habitats (Mayer and Laudenslayer 1988). Other trees and shrubs commonly found in aspen stands include willows, alders (*Alnus* sp.), black cottonwood, lodgepole pine, Jeffery pine, ponderosa pine, red fir, white fir, Douglas fir (*Pseudotsuga menziesii*), Engelmann spruce (*Piceae engelmannii*), sagebrush, roses (*Rosa* sp.), snowberry (*Symphoricarpos rotundifolius*), western chokecherry, and western serviceberry (Mayer and Laudenslayer 1988).

Aspen stands tend to have many snags and the trees are easily drilled out by wildlife. Many cavity-nesting birds such as bluebirds (*Sialia* sp.), sapsuckers (*Sphyrapicus* sp.), downy woodpeckers (*Picodes pubescens*), and chickadees (*Poecile* sp.) utilize these features (Mayer and Laudenslayer 1988) (**Photo 8**).



**Photo 8.** Aspen Habitat at the HLWA.

### ***Animal Species***

The diverse habitats of the HLWA result in an abundance of species, including birds, mammals, reptiles and amphibians, (see **Attachment E** for complete species lists). All dry land within the HLWA is considered upland habitat and is actively managed for dependent species. In addition, the Lake supports Lahontan cutthroat trout as well as aquatic invertebrates.

### **MAMMALS**

Twenty-two known mammals, representative of fourteen families, inhabit the HLWA during all, or some portion, of the year.

#### Deer

The family Cervidae is represented by mule deer, of the Carson River herd. Mammals in the family Cervidae are long-legged, short-tailed ungulates. Mule deer occur in early to intermediate successional stages of most forest, woodland, and brush habitats. Deer prefer a mosaic of various-aged vegetation that provides woody cover, meadow and shrubby openings, and free water (CWHRS 2003). Known natural predators within the HLWA include coyotes and mountain lions (*Puma concolor*).

### Squirrels

The family Sciuridae is made up of small to medium sized rodents that usually have long, bushy tails and tufted erect ears (Jameson and Hans 2004). This family fills an important niche in the food chain as prey for larger mammals such as badgers and coyotes. Within the HLWA the family Sciuridae is represented by the California ground squirrel, western gray squirrel (*Sciurus griseus*), northern flying squirrel (*Glaucomys sabrinus*), golden mantled ground squirrel (*Spermophilus lateralis*), and Douglas squirrel (*Tamiasciurus douglasii*). California ground squirrels commonly use openings and disturbed areas, particularly along roadsides, in croplands, and in grazed meadows (CWHRS 2003). Douglas squirrels are yearlong residents of conifer, hardwood-conifer, and riparian habitats. Western gray squirrels are fairly common locally in mature stands of most conifer, hardwood, and mixed hardwood-conifer habitats. Northern flying squirrels use the cavities of mature trees and snags for cover, and are preyed upon by spotted owls, and other mammals such as martens and bobcats (CWHRS 2003).

### Hares and Rabbits

The family Leporidae is represented by black-tailed jackrabbits and mountain cottontails. The mountain cottontail is primarily an animal of rocky, sage-covered hills and canyons. It is common in sagebrush, fairly common in sparse, montane riparian habitats, and uncommon in subalpine conifer, pinyon-juniper, juniper, and alpine dwarf-shrub habitats (CWHRS 2003). Predators include mountain lions, coyotes, eagles, northern harriers, barn owls, red-tailed hawks, great horned owls, rattlesnakes, and gopher snakes (CWHRS 2003).

### Pika

The family Ochotonidae contains the American pika. American pika were sighted during a visit to the area. The American pika is a common resident of rock and talus slopes of the Cascades and Sierra Nevada. Populations are highly restricted to rock and talus slopes. They eat a wide variety of plants, including grasses, sedges, forbs, and shrubs (CWHRS 2003). Predators include weasels, martens, coyotes, and hawks (CWHRS 2003).

### Canines

The primary, carnivorous mammals are coyotes, of the family Canidae. Coyotes frequent open brush, scrub, shrub, and herbaceous habitats, and may be associated opportunistically with croplands (CWHRS 2003). They are also found in younger stands of deciduous and coniferous forests and woodlands with a low to intermediate canopy, and a shrub and grass understory (CWHRS 2003). Golden eagles, great horned owls, and mountain lions may occasionally kill coyotes (CWHRS 2003). An omnivorous opportunist, coyotes eat primarily mice, rats, ground squirrels, gophers, rabbits, and carrion (Ferrel et al. 1953, Bekoff 1977). Some take insects, reptiles, amphibians, fruits, and occasionally birds, their eggs, and deer fawns (CWHRS 2003).

### Bears

Members of the family Ursidae, bears are omnivorous, eating mostly grasses, forbs, insects, and carrion (CWHRS 2003). Bears change their eating habits as the seasons



change, eating grasses and forbs in the spring, fruits and insects in the summer and fruits and nuts in the fall (CWHRS 2003). Black bears will fish, dig holes and climb trees for food (CWHRS 2003). They need dense vegetation and trees, logs and stumps creating various cavities and holes for dormancy in their winter dens (CWHRS 2003).

## BIRDS

Many avian species utilize the HLWA each year. Some of them are resident and seen regularly, while others are seasonal visitors over-wintering or spending just the fall, spring, and/or summer in the area. The following groups of birds are represented within the HLWA (families shown in parentheses). A list of bird species that have been seen within the HLWA is provided in **Attachment E**.

### Vultures, Eagles, Hawks and Falcons (Cathartidae, Accipitridae, Falconidae)

Raptor species found on-site, or expected to occur within the HLWA, include turkey vultures, falcons, hawks, eagles, and kestrels. Turkey vultures feed primarily on carrion and infrequently on rotting fruit, small mammals, and birds (CWHRS 2003). A vulture's foraging territory is very large 24-32 km, and they do not appear to be territorial (CWHRS 2003). Peregrine falcons (*Falco peregrinus anatum*) nest on cliffs and ledges near water sources. They forage on the wing, swooping down at high speeds onto flying prey, knocking them to the ground (CWHRS 2003). Cooper's hawks (*Accipiter cooperii*) and red-tailed hawks are also found on-site. Cooper's hawks use dense cover to hide from small bird prey and will suddenly dash from cover and chase them down (CWHRS 2003). They will also take small reptiles and amphibians (CWHRS 2003). Red-tailed hawks forage on grassland areas and sometimes in dense coniferous stands, feeding mostly on small birds and mammals (CWHRS 2003). Bald eagles have been observed within the HLWA on several occasions. A nesting pair has been observed for several years near the road along the western edge of Heenan Lake. Bald eagles feed on fish taken on the wing from large bodies of water. They also feed on carrion, injured water birds, and they have been known to steal prey from osprey (*Pandion haliaetus*) (CWHRS 2003). American kestrels (*Falco sparverius*) nest on rock crevices, tree cavities, and snags (CWHRS 2003). They will pounce on insect, small mammal, bird, reptile, or earthworm prey from a low perch or hover (CWHRS 2003).

### Owls (Strigidae)

Several owl species can be found in the HLWA, including great-horned (*Bubo virginianus*), long-eared (*Asio otus*), northern pygmy (*Glaucidium gnoma*), flammulated (*Otus flammeolus*), and northern saw-whet (*Aegolius acadicus*). All of these species can be found year-round within the HLWA except for the flammulated owl, which is only found during the summer months. Owls mainly forage by perching on a high point in a forest or overlooking a meadow and waiting for prey such as small mammals, birds, and insects.

### Grebes (Podicipedidae)

Three species of grebes can be found within the HLWA including the eared grebe (*Podiceps nigricollis*), Clark's grebe (*Aechmophorus clarkii*), and the horned grebe (*Podiceps auritus*). Grebes live most of their lives on water, including feeding, sleeping,

and nesting. Grebes will build nests upwards from underwater and sometimes create floating nests (CWHRS 2003). Grebes eat fish and insects, chasing their prey by diving and pursuing them underwater (CWHRS 2003). Grebes have difficulty walking on land. Some, including Clark's and western grebes, are entirely incapable of walking (Sibley 2001).

#### Pelicans (Pelecanidae)

The American white pelican (*Pelecanus erythrorhynchos*) can be found in the Lake Tahoe area, including the HLWA in the late spring and summer. They are monogamous, colony nesters in groups of several to several hundred (CWHRS 2003). White pelicans will roost on the ground or on logs, but never in trees. American white pelicans actively hunt for fish, their primary source of nourishment (CWHRS 2003).

#### Hérons (Ardeidae)

This family is represented by seven species including two species of bittern, two species of egrets, and three species of herons. Great blue heron (*Ardea herodias*) can be found within the HLWA during summer, but depart the eastern Sierra Nevada region in the winter (CWHRS 2003). Birds in the family Ardeidae are graceful waders who use their long legs, neck, and bill to forage for food in shallow waters.

#### Ducks (Anatidae)

There are numerous species of waterfowl that occur within the HLWA. Of these, the mallard (*Anas platyrhynchos*), bufflehead (*Bucephala albeola*), ringed-neck duck (*Aythya collaris*), ruddy duck (*Oxyura jamaicensis*), and hooded mergansers (*Lophodytes cucullatus*) have been sighted. There are likely many more. Ducks float on water surface eating vegetation, or invertebrates. Bufflehead ducks will also eat fish (CWHRS 2003).

#### Quail and Grouse (Odontophoridae, Phasianidae)

Mountain quail (*Oreortyx pictus*) are HLWA residents, occurring in all seasons. These birds are ground-dwellers found in open country, farmlands, brushy areas, woodland edges, brushy foothills, and stream valleys. They forage quietly and secretively on vegetation and insects in a small group called a covey. When flushed they fly with noisy beating wings (Sibley 2001). Part of the Plan is to enhance habitat for sage grouse (see section IV, B Biological Management Goals: Enhance and Restore Sage Grouse Habitat).

#### Coots, Gallinules, and Rails (Rallidae)

American coots (*Fulica Americana*) were observed at Heenan Lake during on-site surveys. Rails (*Rallus* sp.), the sora (*Porzana carolina*), and American coots represent the family Rallidae. Birds in this family are marsh dwellers that prefer either freshwater or brackish wetlands, including rice fields, grainfields, ponds, and/or near lakes or ponds (National Geographic Society 1987).

#### Shorebirds (Scolopacidae)

Two shorebirds, killdeer (*Charadrius vociferus*) and spotted sandpiper (*Actitis macularia*), have been sighted within the HLWA. Killdeer can be seen year round where as spotted sandpiper occur in the warmer months. These two shore birds eat invertebrates by walking or wading and chasing prey (CWHR 2003).

#### Doves (Columbidae)

Mourning doves have been noted within the HLWA. They can be found there year-round, though they are less common in the winter. Doves feed primarily on grasses, forbs, seeds, and occasionally snails in the spring (CWHR 2003).

#### Goatsuckers (Caprimulgidae)

Goatsuckers are wide-mouthed night-hunters that spend their days roosting on the ground or along low branches (National Geographic Society 1987). Two species of nightjar, the common nighthawk (*Chordeiles minor*) and the common poorwill (*Phalaenoptilus nuttallii*), visit the HLWA uncommonly to rarely during the spring, summer, and fall. Common poorwills feed on flying insects by making short vertical flights from the ground (CWHR 2003). Common nighthawks feed opportunistically, often in urban areas, flying above streetlights capturing insects attracted to the light.

#### Kingfishers (Alcedinidae)

The belted kingfisher (*Ceryle alcyon*) is conspicuous when present along rivers, brooks, ponds, lakes, and estuaries. Kingfishers perch above bodies of water and dive underwater in pursuit of fish prey.

#### Woodpeckers (Picidae)

Woodpeckers forage along tree trunks using their sharp bill to carve out insects and nest cavities. Members of the family Picidae seen at the HLWA include northern flicker (*Colaptes auratus*), hairy woodpecker (*Picodes villosus*), white-headed woodpecker (*Picoides albolarvatus*), and red-breasted sapsucker (*Sphyrapicus ruber*).

#### Passerines

Passerines, or songbirds, are the most abundant avian group at the HLWA. Many families have been sighted within the HLWA throughout the year including, but not limited to: Tyrannidae (flycatchers), Corvidae (jays, ravens, and crows), Sylviidae (gnatcatchers and old world warblers), Emberizidae (new world sparrows, towhees, and juncos), Turdidae (thrushes), troglodytidae (wrens), Parulidae (warblers), Hirundinidae (swallows), Fringillidae (finches), and Icteridae (orioles).

### FISH

#### Lahontan Cutthroat Trout

Federally listed Threatened

The Lahontan cutthroat trout is a member of the *Salmonidae* (trout and salmon) family. Dark olive backs and reddish to yellowish sides frequently characterize the Lahontans found in stream. The sides of lake-dwelling Lahontan cutthroat trout are often silvery. A

broad, pinkish stripe may be present. The yellow to red slashes of pigment under each side of the lower jaw of adults predicate the species common name.

Body spots distinguish the Lahontan cutthroat trout subspecies from the Paiute cutthroat (*Oncorhynchus clarki seleniris*). Paiute cutthroat trout rarely have more than five body spots. Lahontans typically have 50 to 100 or more large, roundish-black spots that cover their bodies evenly. The spots extend onto the head and often to the ventral surface (underside). A secondary distinguishing character is body color. The Lahontan cutthroat trout typically have a coppery to purplish-pink body color

Lahontan cutthroat trout bodies are typically elongated, but not greatly flattened. Like other cutthroat trout, they have basibranchial teeth (on the base of the tongue), red slashes under the jaw and smaller scales than rainbow trout. Lahontan cutthroat trout have 21 to 28 gill rakers (small bony projections on the gills), higher than any other trout of the genus *Oncorhynchus*.

Spawning typically occurs late May through July at Heenan Lake, depending on annual environmental fluctuations in precipitation and temperature. Females mature at 3 to 4 years of age, males at 2 to 3 years of age. Consecutive-year spawning by individuals is uncommon. Natural spawning behavior is similar to other stream-spawning trout. They pair, display courtship, lay eggs in redds (nests) dug by females and chase intruders away from the nest. Lahontan cutthroat trout generally spawn in riffle areas over gravel substrate, which occur in Heenan Creek above the Lake. Lahontan spawning migrations have been observed in water temperatures ranging from 41 to 61°F. Eggs generally hatch in 4 to 6 weeks, depending on water temperature, and fry emerge 13 to 23 days later.

Nearly all fish in Heenan Lake are the result of hatchery spawning at the lake's spawning station located on Heenan Creek just as it flows into the water body. Some natural spawning does occur above the lake in Heenan Creek, although these fish are believed to be remnants of the West Carson River Lahontan cutthroat trout strain, which is slightly introgressed with rainbow trout. Fish reaching the egg take station not adipose fin marked are considered West Carson River strain fish and are not spawned. It is the CDFG's desire to maintain a pure Independence Lake strain of Lahontan cutthroat trout in the lake. These fish provide an important backup of pure Lahontan cutthroat trout for Independence Lake. There is a small population of Lahontan cutthroat trout in Heenan Creek between the egg take station and a barrier falls ¾-miles upstream. These cutthroat trout are of West Carson River origin and are also hybridized with rainbow trout.

Lahontan cutthroat trout living in stream are opportunistic feeders, with diets consisting of drift organisms, typically terrestrial and aquatic insects. In lakes, small Lahontans feed largely on insects and zooplankton. Larger Lahontans typically feed on other fish, though in Heenan Lake no other fish species occur. Food resources associated with the lake are a large amphipod (scud) in the *Gammarus* genus, which occurs in abundance along shorelines in vegetation, insects, and plankton.



Lahontan cutthroat trout are particularly noted for their ability to thrive in highly alkaline waters, most notably in Pyramid and Walker Lakes where alkalinity reaches 3,000-13,000 mg/liter total dissolved solids and pH ranges from 9.5 to 10.5. A reading taken during field surveys in 2006 found water leaving the lake to have a pH of 8.2.

### *History*

Lahontan cutthroat trout were stocked in Heenan Lake from 1938 through 1942 from the Alpine Hatchery located at Markleeville on Pleasant Valley Creek. Later plants to Heenan Lake were from Hot Creek hatchery, presumably from eggs collected from Heenan Lake. Heenan Lake has served as a broodstock source for an annual yield meeting or exceeding 2,000,000 eggs since the early 1940s. The CDFG operates and maintains an egg station at the mouth of Heenan Creek and currently takes closer to 500,000 eggs per year.

Lahontan cutthroat trout planted in Heenan Lake, originally taken from Blue Lakes, Alpine County, were of stock derived from the West Carson River. In 1975 a plant of 5,000 adipose marked yearlings from Independence Lake, Sierra Nevada counties, began a phase-out of the original earlier strain of West Carson River fish, which have been determined to be "slightly introgressed with rainbow trout". There are still small numbers of non-adipose clipped fish observed during annual hatchery operations, presumably these fish come from Heenan Creek and are derived from West Carson River fish. These fish are also known to be hybridized with rainbow trout. Occasionally, anglers catch fish in the Lake that resemble rainbow trout and are not adipose clipped. It is also thought these fish have recruited to the Lake population from Heenan Creek.

Current (2006), restocking includes the addition of 3,000 fingerlings per year that are adipose fin clipped and are raised from Heenan Lake eggs at the Hot Creek Hatchery. This stocking regimen had been closer to 10,000 fingerlings per year. The numbers were reduced in the mid-90s to 3,000 yearlings to improve survivorship of the plants, to reduce intra-specific competition in the lake, and potentially avoid fish die-offs during elevated summer water temperatures.

### *Fishing*

A special season catch-and-release fishery at Heenan Lake was implemented in 1984 and continues to the present. Title 14, §553 of the California Code of Regulations identifies regulations that are specific to the special fishing season in the HLWA. The CDFG may require acquisition of permits, and payment of related fees, prior to angling in the HLWA. The season is open to angling Friday through Sunday weekly, from the Friday before Labor Day through the last Sunday in October. Angling regulations include a zero bag limit and a gear restriction allowing only barbless artificial lures. Boats that are propelled by oars or electric motors are allowed. The CDFG maintains the right to close any portion of the HLWA to trespass or fishing. The lake is designated as Wild Trout, Catch and Release and Heritage Trout water by the California Fish and Game Commission.

## *Department Management*

Internal coordination has been accomplished by CDFG experts addressing management concerns for the species and to effectively protect the Lahontan cutthroat trout population in Heenan Lake. Currently, there is an actively-managed hatchery operation for stocking programs within the state, which contribute to “back-up broodstock” within several state waters. In recent years, water rights have been purchased to greater ensure suitable yearlong habitat within the lake. Documents pertaining to hatchery operation and water right acquisition can be found in **Attachment F** of this Plan.

## REPTILES

The following reptiles highly likely to occur within the HLWA include, but are not limited to, the western rattle snake (*Crotalus viridis*), striped whipsnake (*Masticophis taeniatus*), rubber boa (*Charina bottae*), western terrestrial garter snake (*Thamnophis elegans*), sage brush lizard (*Sceloporus graciosus*), common kingsnake (*Lampropeltis getulus*), western fence lizard (*Sceloporus occidentalis*), and northern alligator lizard (*Elgaria coerulea*). Reptiles within the HLWA are not actively managed individually, yet will be monitored on a habitat basis.

### Common King Snake

The California mountain king snake is widely distributed, and occurs in nearly all habitats (exclusive of high mountains). The common kingsnake is most abundant in valley-foothill riparian situations and in other habitats occurring in the vicinity of irrigated agriculture (CWHRS 2003). Adults and young are probably taken by predatory birds, such as hawks, owls, and mammals, such as skunks and raccoons (CWHRS 2003).

### Western Rattlesnake

The western rattlesnake is quite common, absent only from true desert regions and from large tracts in the Central Valley, where irrigated agriculture has eliminated habitat (CWHRS 2003). They forage in, or near, brushy areas, rock outcrops, mammal burrows, around and under surface objects, and in the open, taking primarily rodents, especially ground squirrels (CWHRS 2003). Western rattlesnakes are preyed upon by mammals, predatory birds, and other snakes.

### Striped Whip Snake

Striped whip snakes in California inhabit eastside pine, pine-juniper, sagebrush, bitterbrush, and desert scrub (CWHRS 2003). They seek cover in dense vegetation, rocky crevices, or around surface objects (CWHRS 2003). Whipsnakes are taken by a variety of predators, including mammals, diurnal birds of prey, and other snakes (CWHRS 2003).

### Rubber Boa

The rubber boa is a very secretive snake taking cover in rotten logs, under rocks, boards, bark and other debris, usually found close to a water resource (CWHRS 2003).

They eat mainly small mammals and small lizards (CWHRS 2003). Though not subjected to intense predation because of their secretive nature, rubber boas are probably taken by hawks, skunks, and raccoons (CWHRS 2003).

#### Western Terrestrial Garter Snake

Western terrestrial garter snakes seek cover and will hibernate in burrows made by mammals (CWHRS 2003). They eat small mammals, birds, fish, frogs, salamanders, and invertebrates, including gastropods (CWHRS 2003). When captured by a predator, the western terrestrial garter snake will release a foul scent from its postanal glands (CWHRS 2003). Predators include mammals, birds and other snakes (CWHRS 2003).

#### Western Fence Lizard

Western fence lizards are extremely common, perhaps the most common reptile in California due to its adaptability in many different habitats (CWHRS 2003). They are found in every habitat except extreme desert and dense forest (CWHRS 2003). Western fence lizards eat insects almost exclusively but they will also eat spiders, scorpions, centipedes, ticks, and isopods (CWHRS 2003). Western fence lizards provide an important food source for some snakes and birds, and shrews will also eat them during times of inactivity (CWHRS 2003).

#### Northern Alligator Lizard

The northern alligator lizard is wide spread in the northern California Sierra Nevada region and can occur up to 11,000 feet (CWHRS 2003). Populations living at high elevations will hibernate for a large portion of the year, only emerging for brief periods of activity in the late summer to early fall (CWHRS 2003). Their diet consists of invertebrates including millipedes, spiders, and insects. Northern alligator lizards are taken by snakes, birds and cats (CWHRS 2003).

#### Sage Brush Lizard

When disturbed, sagebrush lizards will take cover in brush and shrubs. They also utilize small mammal burrows (CWHRS 2003). They eat invertebrates almost exclusively, and are eaten by snakes and predatory birds (CWHRS 2003).

### AMPHIBIANS

There are two amphibians known to occur within the HLWA – the western toad (*Bufo boreas*) and the Pacific tree frog (*Hyla regilla*). Adult toads eat invertebrates. Tadpoles filter plant material from the water and eat detritus from the bottom (CWHRS 2003). The tadpoles are taken by water snakes and birds. Adults are protected by noxious secretions from their skin (CWHRS 2003).

#### Western Toad

The western toad is found almost everywhere in California except for the highest mountains. They feed on invertebrates such as terrestrial insects and arthropods and, at times, earthworms, snails, and slugs (CWHRS 2003). Western toads are primarily nocturnal and seek cover under logs, large rocks, and tree bark (CWHRS 2003).

Tadpoles can be found in stagnant bodies of water, and are predated by birds, garter snakes, and aquatic invertebrates. Adults are somewhat protected from predation by noxious skin excretions (CWHRS 2003).

#### Pacific Tree Frog

The native Pacific tree frog is found in a wide range of habitats from sea level to the tops of mountains, including grasslands, chaparral, woodland, desert oases, agricultural regions, and residential areas (SDNHM 2005) (**Photo 9**). The Pacific tree frog eats a wide variety of arthropods. A number of predators, including garter snakes, rely on the Pacific tree frog as a food source (SDNHM 2005).



**Photo 9.** Pacific tree frog in hand at HLWA.



### ***Threatened, Rare or Endangered Species and Species of Concern***

The HLWA is home to state and/or federal listed species, state species of concern, state “fully protected” species, and California Native Plant Society (CNPS) listed plants (**Table 2**). The CDFG manages for these species on a habitat basis through restoration, protection, and enhancement. Currently, Heenan Lake is being managed for Lahonton cutthroat trout populations. Sage brush habitats will be managed to provide territory for nesting and foraging sage grouse and the host of animals associated with sage brush habitats. Aspen stands will be managed for aspen fungus infestation and conifer encroachment. Habitat for the Carson River mule deer populations will be enhanced or allowed to naturally recover, in support of healthy populations of these animals. Mule deer use wet meadow and the edges of aspen habitat for fawning. The wet meadow habitat is naturally recovering from heavy grazing and will continue to recover and support fawning of mule deer. A management plan for the recovery/sustainability of aspen stands within the HLWA is outlined in Section IV below. These guidelines will promote healthy aspen stands that will continue to provide high quality habitat for mule deer, and other habitat-associated species, into the future. The U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA) will be consulted prior to any modifications to the habitats of federal listed plant, animal, and fish species. Internal consultations have been conducted to address any management concerns for state-listed species.

**Table 2: Definitions of Special-status Listings**

<b>Federal Endangered</b> = Federally listed as Endangered; in danger of extinction.
<b>Federal Threatened</b> = Federally listed as Threatened; likely to become endangered in the foreseeable future.
<b>State Endangered</b> = State-listed as Endangered; in danger of extinction
<b>State Threatened</b> = State-listed as Threatened; likely to become endangered in the foreseeable future.
<b>State Fully Protected (Fish and Game Code §3511, §4700, §5050 and §5515)</b> = The State’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. The code states that these species “....may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any “fully protected” species, although take may be authorized for necessary scientific research”. Take for recovery activities are also permitted.
<b>California Species of Concern</b> = May be declining or may be in need of concentrated conservation efforts to prevent decline.
<b>CNPS 1B</b> = Rare or Endangered in California and Elsewhere.
<b>CNPS List 2</b> = Rare, threatened, or endangered in California, but more common elsewhere.

### **BIRDS**

#### **Bald Eagle**

State Endangered, State Fully Protected

Bald eagles are occur in the HLWA, and can be seen year-round. A nesting pair has been observed and the nest site has been used five of the past six years. They require large bodies of water, or free flowing rivers with abundant fish, and adjacent snags or other perches from which they swoop down and pluck prey from water (CWHRS 2003). They forage primarily on waterfowl, yet also hunt for fish and small to medium sized

mammals. Wintering bald eagle abundance tends to correlate with waterfowl numbers, particularly coot populations. Bald eagles require large, old-growth trees or snags in remote, mixed stands near water (CWHRS 2003). Bald eagle eggs and young may be preyed upon by raccoons, squirrels, ring-billed gulls, and great horned owls. Adults lack major predators, though they often compete with osprey for food and are harassed by other birds such as crows, ravens, and smaller raptors.

Willow Flycatcher (*Empidonax traillii*)  
State Endangered

A willow flycatcher was sighted within the HLWA boundary. Willow flycatchers most often occur in broad, open river valleys or large mountain meadows with lush growth of shrubby willows (Serena 1982). Willow flycatchers require dense willow riparian areas for nesting. Their main predator is the brown-headed cowbird that often parasitizes willow flycatcher nests.

American White Pelican  
California Species of Concern

White pelicans are relatively common in the spring, summer and fall at Heenan Lake. They feed in water of various depths, dipping for prey from the surface and scooping them up in their substantial throat pouches. American white pelicans rest in the day and roost at night along the edge of water bodies, on beaches, sandbars, or on old driftwood (CWHRS 2003). They often nest on small islands or remote dikes in large freshwater and salt water lakes (CWHRS 2003). Mortality results mostly from human disturbance, "colony interactions" and bad weather (Sloan 1982). Their major natural enemies are gulls, which steal eggs, but only in small numbers, and coyotes, which can eliminate colonies if nesting islands become connected to the shore (CWHRS 2003). American white pelicans are susceptible to pollution of watershed by persistent pesticides. The degradation of breeding habitat has eliminated several major colonies in California (CWHRS 2003).

Cooper's Hawk  
California Species of Concern

Cooper's hawks have been seen within the HLWA. They prefer dense stands of live oak, riparian deciduous or other forest habitats near water nesting in the crook of deciduous trees (CWHRS 2003). Cooper's hawks prey on small birds, mammals, reptiles and amphibians. Nestlings and immatures not yet skilled at catching prey may be killed by ravens, northern goshawks, and great horned owls.

Osprey  
California Species of Concern

Osprey nest on large platform nests in trees, manmade structures, and snags (CWHRS 2003). They forage near bodies of water, taking most of their prey directly from the

water (CWHRS 2003). Prey consists mainly of fish but they will also eat amphibians, small mammals, birds, lizards and snakes. Eagles compete with osprey, often taking their catch (CWHRS 2003).

## FISH

### Lahontan Cutthroat Trout Federal Threatened

Lahontan cutthroat trout were planted in Heenan Lake in 1975. Lahontan cutthroat trout like other cutthroat trout, have red slashes under their jaw. They are opportunistic feeders whose diet consists of insects and zooplankton. Lahontan cutthroat trout are known for their ability to thrive in alkaline water and are known to live in waters with a pH of 9.5-10.5. The egg taking station on Heenan Lake provides Lahontan cutthroat trout to several areas around California and Nevada, and is considered an essential operation to assure the continued existence of the species.

## PLANTS

The CDFG has concluded, based on existing data from CNPS, USFWS, and CNDDDB, that the following plants, which occur within the HLWA, are species regulated under California Environmental Quality Act (CEQA) guidelines because they meet the criteria for listing as rare, threatened, or endangered species in Section 15380, Title 14, CCR. A complete list of plant species can be found in **Attachment E**.

### Great Basin claytonia (Claytonia umbellata) CNPS 2. 3

Great Basin claytonia is in the family Portulacaceae, and is found on dry, north and east facing, talus slopes in sub-coniferous forests. It flowers in May through August, and has white to pink petals. Great Basin claytonia occurs between 5,600 feet and 11,500 feet in elevation, and was seen within the boundaries of the HLWA during on-site surveys in late August of 2006.

### Valley Sedge (Carex vallicola) CNPS 2.3

Valley sedge is a monocot in the family Cyperaceae, which can be found on moist to dry slopes. It occurs between 5,000 feet and 9,000 feet in elevation and blooms between July and August. It is associated with Great Basin scrub and meadows and seep habitats. Valley sedge was seen within the HLWA boundaries during on-site surveys in late August of 2006.